



Research Product 98-33

**The Military Decision-Making Process (MDMP):
A Prototype Training Product**

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14. ABSTRACT (Maximum 200 words): This report documents the analysis, design, and development of the Military Decision-Making Process (MDMP): A Prototype Training Product. The MDMP product is a computer-based, stand-alone training support package to assist individuals and staffs of light infantry brigades in learning to participate in the military decision-making process. The product consists of a compact disk that presents a self-paced course of instruction on how to conduct the MDMP. Doctrinal fundamentals based on FM 101-5, <u>Staff Organization and Operations</u> , serve as the basis. The course also contains numerous tactics, techniques, and procedures (TTP) that will assist staff officers in understanding and mastering their individual skills and their role in the collective process. This program, sponsored by ARI, was coordinated with the Joint Readiness Training Center Leader's Training Program.					
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FOREWORD

The U.S. Army Research Institute for the Behavioral and Social Sciences (ARI), Infantry Forces Research Unit, has, over the past several years, conducted research designed to improve training and performance for battalion and brigade staff officers. Findings from research on home station determinants of combat training center performance indicated that staff officer training was lacking and that many personnel were arriving at positions on battalion and brigade staffs without adequate preparation. Early ARI research sponsored by the Defense Advanced Research Projects Agency developed training for individual staff officers in the Army National Guard. The two resulting computer-based training programs were subsumed under the generic title of Battle Staff Training System (BSTS). The Military Decision-Making Process (MDMP) product is an outgrowth of the BSTS, further documenting capabilities and application of computer-based instruction (CBI).

This report describes the design and development of a CBI module prepared for the Joint Readiness Training Center (JRTC) Leaders Training Program (LTP). This prototype training product instructs light infantry brigade staff officers in application of the seven-step MDMP. The compact disc-based materials provide position-specific, MDMP-related tactics, techniques, and procedures (TTP) for brigade staff officers. TTPs are available for the primary staff, and combat support and combat service support positions. BDM International, Inc. performed the work for ARI under ARI work unit H0027, light forces training.

These MDMP materials have been delivered to the JRTC for use in its training. JRTC-LTP will disseminate the materials to units prior to their attendance at the JRTC Leaders Training Program and to others on request. The results of this research effort have been briefed to personnel throughout the JRTC and to the U. S. Army Infantry School. An ARI evaluation of the materials is underway in selected Active and Reserve Component units.

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THE MILITARY DECISION-MAKING PROCESS (MDMP): A PROTOTYPE TRAINING PRODUCT

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THE MILITARY DECISION-MAKING PROCESS (MDMP): A PROTOTYPE TRAINING PRODUCT

Introduction

Synchronization of all the elements of combat is crucial to winning the battle. Synchronization includes coordination and integration, and brings the fourth dimension of the battlefield, time, sharply into focus. To fight effectively, there must be a well thought out tactical plan to guide execution. However, observations of brigades training at the Combat Training Centers (CTCs) reveal that commanders and staff officers frequently exhibit deficiencies in synchronizing the battle. Much of this can be attributed to a lack of knowledge with respect to the "how to" of planning.

Background

Historically, success at the CTCs has been directly related to the unit's ability to execute the decision-making process. As noted in the preface to a newsletter from the Center for Army Lessons Learned (CALL), "Without a well-developed, integrated, and synchronized plan, the likelihood of a unit being successful is significantly degraded" (CALL, 1995d). Mission planning and the military decision-making process (MDMP) are inseparable. The MDMP consists of seven steps: receipt of mission, mission analysis, course of action (COA) development, COA analysis, COA comparison, COA approval, and orders production. The MDMP offers a proven analytical process that assists the commander and staff in developing, integrating, and synchronizing their plan.

Although officers chosen for command or staff positions are selected from the upper percentages of their respective year groups, in practice, they frequently exhibit a lack of some required competencies in the activities found in staff processes. A primary weakness is that they frequently cannot use, and do not understand, the decision-making process (Battle Command Battle Laboratory (BCBL), 1995, p. 1-4). Numerous CTC observations have reinforced the finding that units lack the ability to properly conduct the MDMP. "While battle staffs are familiar with the process, its intent and the products associated with each step, *most staffs experience difficulty implementing the process*" (CALL, 1995b, p. II-24). Additionally, one of the stated top concerns at the Joint Readiness Training Center (JRTC) is inability to conduct the decision-making process (Operations Group, JRTC, 1996). Some training on the MDMP is provided in several professional development courses, to include basic and advanced courses, the Combined Arms and Services Staff School, and the staff colleges. However, this training, available on a limited basis, is often not assimilated, and more importantly, does not come to the officer at the time in his career when he needs it. Too frequently, the officer has already served in a staff position before he receives the training that might have helped him.

To complicate the problem, the Army has changed its decision-making process three times in four years. In 1993, the U.S. Army Command and General Staff College (CGSC) published a student text that provided details on how to conduct what was then called the tactical decision-making process (TDMP) (CGSC, 1993). In 1995, they produced another student text

on command and staff decision processes (CGSC, 1995). Both student texts discussed the TDMP which included three decision-making process models: deliberate, combat, and quick. The use of a particular model depended on the amount of available planning time. The major difference in the 1993 and 1995 student texts was the realigned steps and procedures. For example, the 1993 version presented a lengthy discussion of the four main actions required in mission analysis, while the 1995 version contained eleven specific steps. Likewise, the 1995 version contained an additional step in the war gaming process as well as a discussion on risk assessment and risk management that was not part of the 1993 version.

The recently published Field Manual (FM) 101-5 Staff Organization and Operations (Headquarters, Department of the Army (DA), 1997) contains still another version. It presents a single decision-making model, the Military Decision-Making Process (MDMP), rather than the three separate models presented in the TDMP. At the heart of the single model process is that the MDMP is "abbreviated" during a time-constrained environment, when planning time is short. The 1997 manual contains only 31 pages (as opposed to more than 120 pages in earlier versions) on the decision-making process. One of the consequences of this reduction in size is that most of the techniques and "how to" information from the earlier student texts has been eliminated. Compounding this problem is that since many staff officers and commanders have already attended their requisite professional development courses, they will not receive any additional institutional training on the new version of the MDMP. Thus, due to phasing of their training and within unit turbulence, personnel on the same staff may have very different impressions of the way to conduct the MDMP.

Historical Perspective

The Army provides demanding, realistic training opportunities at the CTCs. The Army has also made an extensive effort to evaluate unit performance and capture lessons learned from these exercises, as well as from real world combat situations. As a result, a wealth of knowledge and observations are available to assess unit capabilities in the area of decision-making.

In 1993, CALL Newsletter 93-3 attempted to change the perception that the TDMP was "slow, laborious, and of marginal value in a fast-moving tactical situation" (CALL, 1993, Foreword). This newsletter provided techniques and procedures that allowed the TDMP to be conducted more quickly and effectively, while still according to doctrine. CALL observations indicated that "home-grown" methods often deviated from the doctrinal process, leading to an ineffective, unexecutable plan. Their assessment was that doctrine provided a logical sequence, but lacked details on "how to" execute individual steps.

In August 1993, under the auspices of the Battle Lab at Fort Leavenworth, the Army began a program of focused CTC rotations to review battle commanders' performance. The program's intent was to examine what the Army trains commanders to do on the battlefield, evaluate how well commanders perform these tasks, and determine what research is doing to assist them in performing their duties (BCBL, 1995). One of the major issues examined was the execution of the TDMP. Analysis of observations from the CTC rotations showed that battle

commanders generally did not use the decision-making process as it was designed, because they did not understand it (BCBL, 1995).

Despite attempts to assist units and commanders in improving their decision-making skills, through after action reviews at the CTCs and various CALL publications, it was observed that units seemed to make the same mistakes year after year, but at a different level of sophistication (CALL, 1995a). Equipment improvements created new parameters, causing new lessons to be learned for the same categories. For example, although commanders need to "see" the battlefield to make wise decisions and control the flow of events, they fail to capitalize on many assets that could help them "see." Likewise, having sophisticated equipment does not guarantee synchronization. Planning, understanding capabilities and coordination of activities is essential.

CALL also noted a recent dramatic decline in proficiency levels brought by units rotating to the CTCs. Problems occur in planning, synchronizing, and executing on the battlefield. Observations from both the National Training Center (NTC) and JRTC recorded that units were failing to effectively synchronize assets during combat operations (CALL, 1995c). Specific techniques were identified to help correct this deficiency. For example, units were to make better use of the tools from the earlier TDMP. Targeting meetings were to be conducted as part of the decision-making process. Use of synchronization matrices and decision support templates was encouraged. The process of war gaming was clearly defined. The use of execution checklists was emphasized. Rehearsals were expanded to include unit, maneuver, and fire support.

Based on additional observations and lessons learned, CALL published another newsletter that built upon the tactics, techniques, and procedures (TTPs) outlined in the 1993 Newsletter. This document provided TTPs that units could implement to alleviate some of the common problems associated with the TDMP, especially in a time-constrained environment (CALL, 1995d). With dissemination of these publications, brigade commander and staff understanding began to show improvement (CALL, 1996). Units incorporated decision-making steps, along with standardized products, into unit standing operating procedures (SOP). However, as recently as mid-1996, staffs still failed to adhere to the TDMP and execute it in an adequate fashion. This resulted in plans not being coordinated or synchronized. Typically, time was still wasted during the planning process. This was especially true when planning time was short and the unit was stressed to plan for a mission.

With problems continuing to be manifested by units, the Army decided to replace the three separate models of the TDMP with a single model MDMP. FM 101-5 Staff Organization and Operations (DA, 1997) is now the Army's doctrinal source for the MDMP, the doctrinal approach to decision-making. The new FM 101-5 presents the seven MDMP steps, then provides various techniques that can be used to shorten the process in a time-constrained environment. It emphasizes that the unit must master the complete MDMP before attempting to implement the techniques to abbreviate the planning process.

However, with the already recognized deficiency in staff skills (see Thompson, Thompson, Pleban, & Valentine, 1991), simply publishing a new procedure for executing the decision-making process is not likely to solve the problem. As indicated earlier, decision-making skills are taught in officer professional development courses. Officers who have already attended these courses will not receive further formal training until after they have served as commanders or staff members. They will not have the opportunity to refine their skills. A way to overcome this shortfall is desperately needed.

Computer-Based Instruction

One potential solution to the problem of teaching the revised MDMP to a widely dispersed audience with limited time available, is through the use of computer-based instruction (CBI). Fletcher (1995) reviewed a number of studies, concluding that CBI may be best, and perhaps most cost-effectively used to provide training. CBI can provide practice and simulation for expensive or inaccessible equipment and dangerous or expensive situations. It provides stand-alone materials for physically dispersed learners while privately monitoring progress. Training outcomes are standardized, with reduction in variability. Fletcher (1995) concluded that CBI can be used to accomplish a wide range of instructional objectives and it is often more effective and less costly than other, more commonly used approaches to military training. Data gathered on the effectiveness of CBI are extremely encouraging. Fletcher (1995) also investigated recycle rates, and training time. He reported improved course completions and improved test performance for computerized training. Cost reduction per student was also realized.

A variety of CBI courses for brigade and battalion staff officers have already been developed and evaluated. Under the SIMITAR (Simulation in Training for Advanced Readiness) umbrella of research, the Defense Advanced Research Projects Agency (DARPA) funded first a battalion level and then a brigade level training program (Andre' & Salter, 1995 and 1996). This instruction was designed to provide initial entry-level training for staff officers. The primary target audience was the National Guard. Some of the training was computer-based; a large proportion was contained in doctrinally-based text that accompanied the computer-based program. Training was developed for primary staff officers, and for combat support (CS) and combat service support (CSS) elements. A version of these two Battle Staff Training Systems, jointly known as BSTS, was expanded and tested at Fort Knox, under the research program and auspices of the ARI Armored Forces Research Unit (AFRU) and the Force XXI Training Program. The final product was updated for use in staff training in the Armor Officer Advance Course. The twenty-eight courses of instruction developed at Fort Knox contain tailored text and CBI lessons for staffs and their commanders (Andre', Wampler & Olney, 1997). The officers who tested the courses were very receptive to these new training techniques. They considered the CBI and tailored text lessons to have a much greater training value than just reading doctrinal references. There was a marked improvement in job knowledge after completion of the courses. CBI lessons thus appear to be a valid tool for addressing training weaknesses within battalion and brigade staffs. (See Andre, Wampler, & Olney, 1997, for a full report on the AFRU Force XXI program and Pleban, Thompson, & Valentine, 1993, for an interim solution to the problem.)

The CBI described above represents a full course of instruction for the Armored Force. However, there is also a demonstrated need for training of smaller amounts of information, for example, the content of the MDMP, and for other target audiences. The Force XXI work covers training materials for staff positions; there may be redundancy across positions. The MDMP work was conceptualized to approach the material from another perspective, and to focus on the basic generic content of the MDMP, with specific position additions and TTPs appended as supplementary information to the basic core material. The intent was to develop one product which could benefit more than one set of people.

Purpose

The purpose of this research was to develop a prototype individualized training program to prepare officers to conduct the MDMP during a collective training exercise. The specific focus was to design and develop an instructional package that would assist a brigade commander and his staff hone individual MDMP skills. The outcome of this enhanced training would be to produce better collective performance in conducting the MDMP.

This MDMP training package was especially designed for distribution to light infantry units prior to their participation in a JRTC rotation. The purpose is to provide the training materials to units while they are at home station for study prior to their attendance at the Leaders Training Program (LTP) that precedes a JRTC rotation. During the LTP, units perform practical exercises using the MDMP; enhanced home station training should improve their performance when they get to the training center. The package can also be used at the LTP to provide assistance to units during the course of their LTP training.

Method

The Systems Approach to Training as outlined in TRADOC Regulation 350-70 (U.S. Army Training and Doctrine Command, 1996) served as the functional model to guide the front end analysis (FEA), design and development of the MDMP training materials. Information from current Field Manuals, material from the Center for Army Lessons Learned, the CTCs, and previously completed ARI research programs, was also evaluated for potential inclusion in the course. Evaluation of the course structure and content was a continuous and iterative process. The following sections of this report present a summary of the process that was followed in creating this prototype training program.

Positions Included

The course of instruction for this program targeted the brigade level. Two main factors lead to this decision. First, the brigade is the largest organization that participates in training at JRTC. If the MDMP is properly conducted at that level, then the organizations below the brigade will receive an effective, executable order upon which they can base their planning. Secondly, the battalions and separate units can then follow the example set by the brigade

commander and staff. Brigade staff members can also mentor subordinate organizations in the conduct of the MDMP.

The original intent was to have a separate CBI course for each position and a common core course that presented the doctrinal fundamentals of the MDMP in a program similar to that found in the BSTS work. The initial assumption was that each officer would study his own course material to gain individual proficiency. The CBI courses would operate in a stand-alone mode so personnel could receive the training independently and simultaneously at various locations. The courses would contain information as to how that particular position should interface with each of the other positions. The courses would contain a consistent scenario to serve as the basis for examples and exercises. The courses were to be instructional in nature and were not intended to validate proficiency.

Initially, the target population consisted of the commander and executive officer (XO), S2 (Intelligence), S3 (Operations), and fire support officer (FSO). These personnel were considered the linchpins of the planning process as they impact the training and participation of all other staff members. The aviation unit commander was later added as a key member of the combat arms planning process. As the research and the FEA progressed, it became apparent that while having individual staff officers trained in the MDMP is important, having the commander and staff officers knowledgeable of how to integrate their roles in the process with other staff positions is even more valuable. The XO, as the trainer for the brigade, should serve as the leader to ensure staff interaction, consistent with the commander's guidance and unit SOP. (A description of other Force XXI work focusing on staff integration can be found in, among others, ARI work summarized by the COBRAS Team, 1995.)

With this slightly different focus, a decision was made to design a single CBI course that could be used to ensure that the entire brigade staff was trained in the new MDMP. The course had to be doctrinally based, yet provide TTPs to assist individual personnel in the performance of their responsibilities. It also needed to present the integration requirements of the MDMP. A decision was made to create a single computer-based course with seven lessons, each covering one step of the MDMP. When the design reached this point, the contents of the single CBI course were expanded to include the remainder of the brigade staff. Having the entire staff trained on a standardized course would lead to improved proficiency. Therefore, TTPs for CS and CSS positions were added to the structure of each lesson.

The final MDMP course design includes seven lessons matching the seven steps of the MDMP, with TTPs for 19 selected positions. Unlike the other courses, the MDMP's material is totally incorporated onto a compact disc (CD). There is no text-based material, although reference is made within the material to FM 101-5, Staff Organization and Operations (DA, 1997). TTPs are included for the brigade commander, XO, S1 (personnel), S2 (intelligence), S3 (operations), and S4 (Logistics). Additional TTPs are available for the Fire Support Officer (FSO), the Aviation Commander (AVN CDR), and brigade level CS officers: the engineer (ENGR), air liaison officer (ALO), air defense officer (ADO), chemical officer (CHEMO), military police (MP) platoon leader, military intelligence company commander (MICO), air and naval gunfire liaison company officer (ANGLICO), special operations command and control

element (SOCCE), civil affairs (CA) officer, psychological operations (PSYOP) officer, and signal officer (SIGO). Sample TTP selection menus within the training materials are shown at Figures 1 and 2. The number of TTPs in any lesson varies according to the individual position and the specific step in the MDMP.

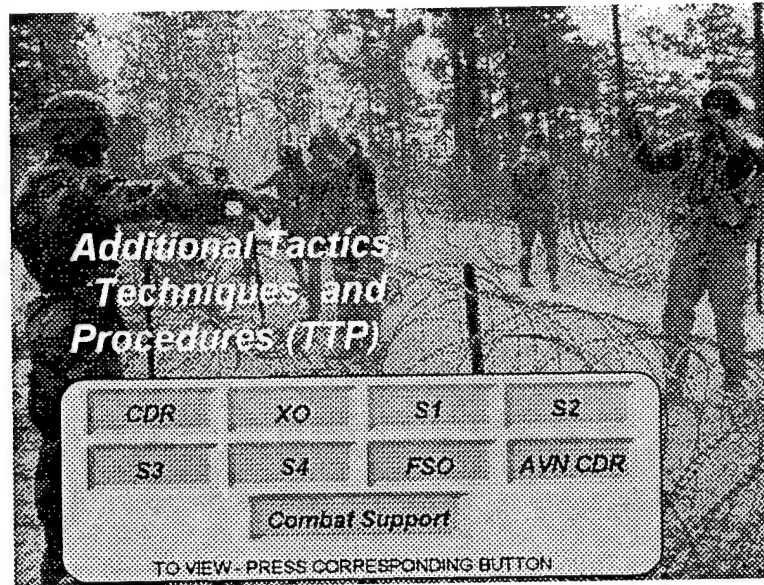


Figure 1. Sample TTP selection for commander and staff.



Figure 2. Sample TTP selection for CS positions.

Course Content

An early draft version of the May 1997 version of FM 101-5, Staff Organization and Operations (DA, 1997), was selected as the doctrinal foundation for the course in an effort to provide the most current information available. A combination of information from publications and studies from CALL and JRTC focusing on lessons learned from training at the CTCs and doctrinal material from the draft FM yielded the tasks for the MDMP. Since the purpose of the CBI courses was to train officers on “how to” conduct the MDMP, including tactics and techniques was a necessity. In addition, several TTPs that had already proven successful in teaching various steps of the MDMP were identified and included. For example, the identification of who should accompany the commander to receive an order from higher headquarters and the use of a mission analysis worksheet are two items that facilitate more rapid and coordinated planning. This kind of information provided the foundation for what was to be trained in the MDMP course.

The TTPs offered a unique challenge. By their nature, tactics, techniques, and procedures encompass a broad base of information. Some were focused directly at a particular officer or staff section; others involved the integration of various officers, brigade sections, or even units. The challenge was to determine how best to capture the information. It was ultimately decided that whenever possible, TTPs would be placed into the flow of the MDMP lesson. The remaining TTPs were grouped by lesson or by step in the MDMP and highlighted for the attention of the appropriate person. In some instances, the same TTP was duplicated for more than one individual since the information applied to those officers as well. The placement of TTPs in the lesson often resulted in providing the integration linkage mentioned in the lesson, providing one or more valuable “how tos” to accomplish a specific task.

Course Design

The final course design is depicted in Figure 3. Each lesson corresponds to one of the

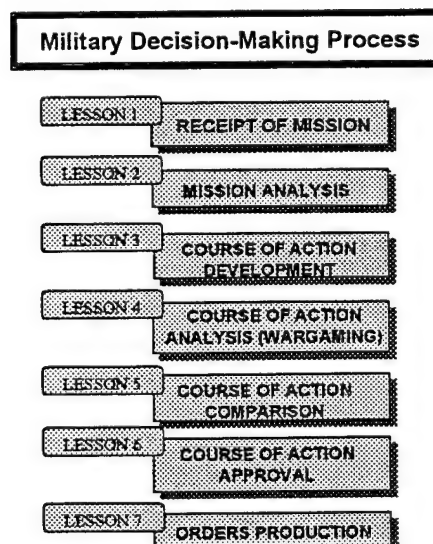


Figure 3. Course outline.

seven steps in the MDMP. Each lesson follows a similar structure. A brief discussion of the doctrine for the step is presented. This includes the identification of the products that should be developed or refined during that step. For example, Lesson 2, the MDMP step on mission analysis, provides details to assist the commander in preparing his initial planning guidance (see sample screen extract at Figure 4). Also, integrated into this doctrinal presentation are TTPs on how to execute that step in a time-constrained environment. This portion of each lesson also shows the involvement of the other positions so each staff member can better understand how his participation interfaces with and impacts on the other staff members. At the conclusion of each lesson are additional TTPs that are directed at each of the specific brigade positions. These TTPs are intended to provide lessons learned and helpful tips to assist the individual to become more proficient in executing that step of the MDMP. With this design, each person can see not only his own functions, but also how he fits into the overall process. He also gains specific information tailored to his own responsibilities. The resulting MDMP course of instruction available to the unit XO or commander can be used to train all staff members.

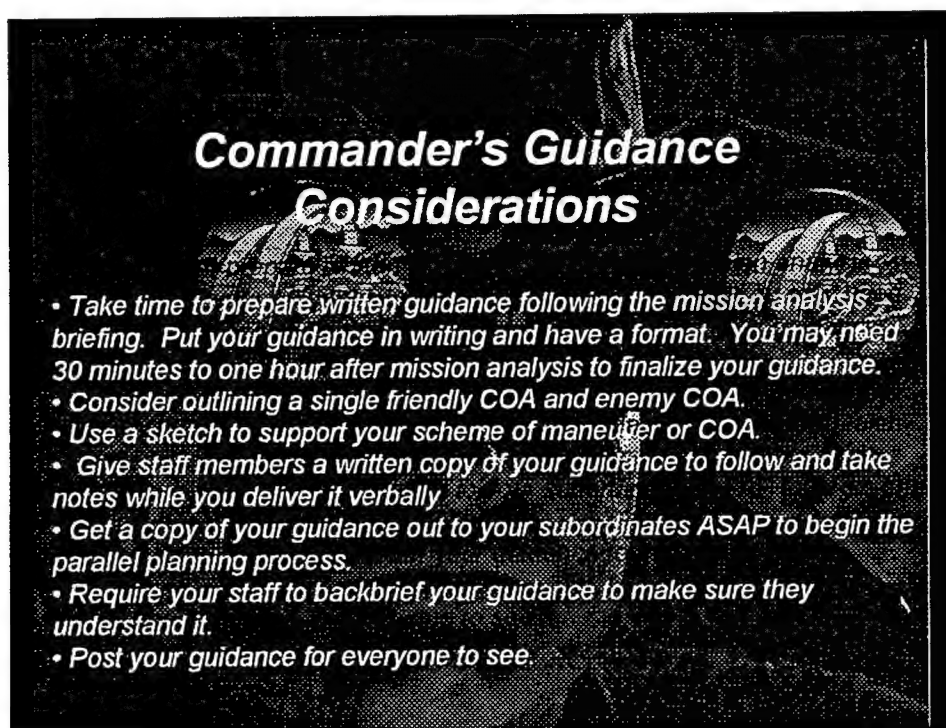


Figure 4. Sample TTP for commander's guidance.

Course Development

Using the information gathered and the overall course design, storyboards were developed for each of the seven lessons. The storyboards contained the visual information (graphics, photos, videos) that would appear on the computer screen, the narration that would be converted for audio presentation, and branching instructions for navigation through the course material.

The storyboards were reviewed by the contractor to ensure instructional soundness, doctrinal accuracy, completeness, and administrative correctness. Lessons were modified as necessary and provided for Government review. Simultaneously, the storyboards were sent to the JRTC at Fort Polk for a technical content review. Personnel from the LTP, specifically the coaches and the military staff, reviewed each section of each lesson. LTP cadre were able to identify a variety of sample products generated by units who had trained at the JRTC, for further inclusion in the lessons. The products included, for example, sample synchronization matrixes, orders formats, etc. LTP personnel also checked the materials for overall content accuracy, and adherence to doctrine. ARI personnel also checked the material.

After the initial development of the seven MDMP lessons, the new FM 101-5 was finalized and published. To maintain consistency with doctrine, each of the lessons was again examined and modified as necessary to correspond with the latest approved doctrine. Following all reviews for accuracy and doctrinal correctness, the lessons were edited to capture the latest changes. Completed storyboards were then authored into CBI using a commercially available software program. A contractor quality assurance review was conducted to ensure that the course was programmed and operated as designed. Additionally, ARI personnel reviewed each screen of each lesson to ensure proper branching, etc. Final changes and edits were made as required, and CDs pressed.

Results and Discussion

A comprehensive CBI brigade MDMP course of instruction was designed and developed and the final material was incorporated on to a CD. As previously noted, the course consists of seven lessons, each corresponding to a step in the decision-making process. Since the individuals studying the course probably possess varying levels of expertise, flexibility in working through the course materials became a key element. Figure 5 depicts the navigation

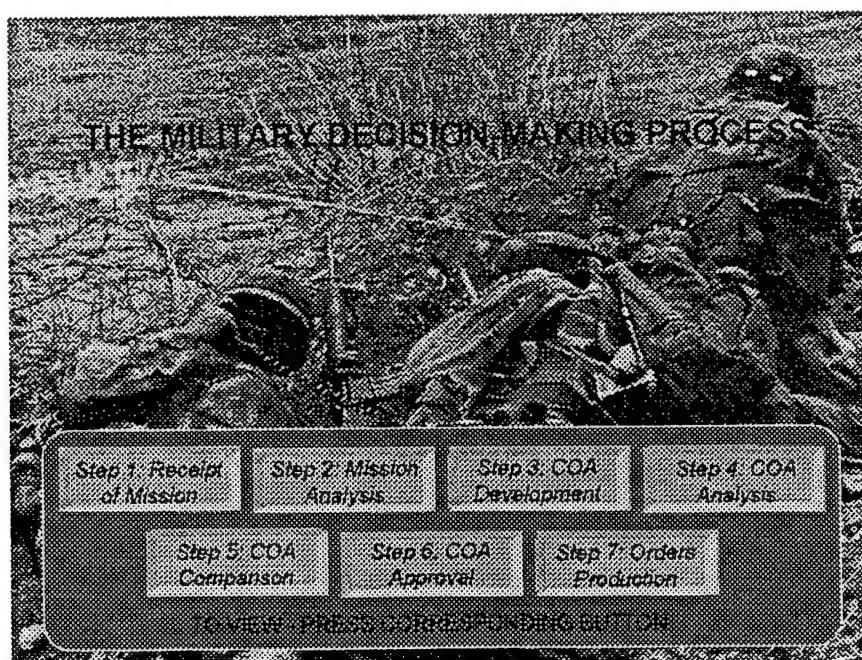


Figure 5. Lesson branching. 10

ability incorporated that permits an individual to study lessons in any sequence desired. An individual who has already mastered selected steps of the MDMP need only study the lessons where improvement is needed or desired. Someone wanting to conduct refresher training on a designated portion of the MDMP can proceed directly to that lesson in the course. Since the course was designed only for information and not as certification or some sort of prerequisite for another course, no attempt was made to include testing modules or a training management system. If used in a unit or at the LTP, the practical exercise of applying the MDMP becomes the test.

To facilitate learning, all lessons are structured in a similar manner. Each lesson contains a doctrinal overview based on the May 1997, version of FM 101-5. The doctrinal material is intended to provide a foundation for information concerning how to conduct decision-making when the available time and situation permit thorough planning. It is important to train on the full and complete MDMP so that everyone learns how their particular activities interrelate and impact on other staff sections. They also gain an appreciation for the functions that must be accomplished by other sections; this should assist them in determining how they might better interact with the other sections during the steps of the MDMP. Figure 6 is a sample of doctrinal material. It shows a screen from Lesson 3 that depicts doctrinal guidance concerning course of action development.

THE MILITARY DECISION-MAKING PROCESS

COA Development Steps

- *Analyze relative combat power*
- *Generate options*
- *Array initial forces*
- *Develop scheme of maneuver*
- *Assign headquarters*
- *Prepare COA statements and sketches*

COA Development Products

- *COA statements and sketches*
- *Task/purpose for each subordinate unit, including CS units*
- *Generic task organization*
- *Operational graphics*



Figure 6. Sample doctrinal screen.

Frequently, the MDMP must be conducted in a time-constrained environment. Some helpful, doctrinally based suggestions to conserve time in the MDMP are included throughout the course material. These suggestions were gleaned from various sources and are useful

knowledge for everyone. A sample screen taken from Lesson 1 is at Figure 7. This screen allows the individual to obtain some general doctrinal guidelines for conducting the MDMP while operating in a time constrained environment. By studying the doctrinal information, commanders and staffs will better understand the implications of compressing the process or attempting to conduct the MDMP without full participation of the entire staff. They will understand the doctrinal basis of the MDMP step before studying specific the TTPs.



Figure 7. Sample screen for time-constrained MDMP.

Individual understanding of the MDMP doctrine is an important initial step. However, as mentioned earlier, the latest doctrinal sources, for the most part, do not provide much detail. This course contains considerable information and help on “how to” conduct the MDMP so the person can gain a deeper understanding of the process. For example, doctrine states that war gaming is a critical portion of course of action analysis. FM 101-5 even provides some sample forms that can be used to record the results (Figure 8). The JRTC MDMP course goes further and explains exactly how a unit should complete the forms. In addition to the few samples provided in the doctrinal references, the course contains numerous sample forms that can be used to facilitate a variety of events and activities while conducting the MDMP. These examples were collected from different units who have used them during training at the JRTC.

Having a solid doctrinal foundation in the MDMP is certainly a prerequisite for attempting to compress or modify the MDMP in a time-constrained environment. Besides the doctrinal guidelines for saving time, course materials include additional TTPs that can be

SYNCHRONIZATION MATRIX

TIME	-14	-12	-10	-8	-6	-4	-2	H-5	H	+6	+10	+12	+14	+22
ENEMY ACTION														
DECISION														
M DEEP														
A RECON														

WARGAME WORKSHEET

CRITICAL EVENT:									
SEQUENCE NUMBER	ACTION	REACTION	COUNTER-ACTION	ASSETS	TIME	DECISION POINT	CCIR	CONTROL MEASURES	REMARKS

Figure 8. Sample doctrinal forms.

extremely beneficial in various circumstances. Figure 9 is a sample screen taken from Lesson 6 that presents doctrinal information on course of action approval as well as a technique for saving time. In this instance, additional information is also available that could be useful for the XO or S3.

The CDR's decision is based on:

- His experience
- His trust and confidence in his command
- His estimate of the situation
- COA's inherent flexibility
- COA's compatibility with higher CDR's intent

The commander may:

- Agree with the recommendation
- Modify it
- Select another course of action

In a time-constrained environment, the commander should be involved throughout the process, eliminating the need for comparison and approval.

XO or S3

TO VIEW - PRESS BUTTON

Figure 9. Sample TTP for MDMP in time-constrained environment.

As was shown in Figures 1 and 2, the course is designed for various brigade level positions. In addition to the doctrinal information for these personnel, TTPs tailored to specific positions are included to supplement doctrinal guidelines and offer a "how to" technique. For example, Figure 10 is a screen from Lesson 3. It is an option available to the XO and S3. It provides a technique to assist staff officers in tracking the battle time while conducting a hasty war game during course of action development. Throughout each lesson as appropriate, each officer can select his designated branching button and review TTPs that could be beneficial during that step of the MDMP. Additionally, of course, anyone can also review the TTPs for other staff positions, if desired.

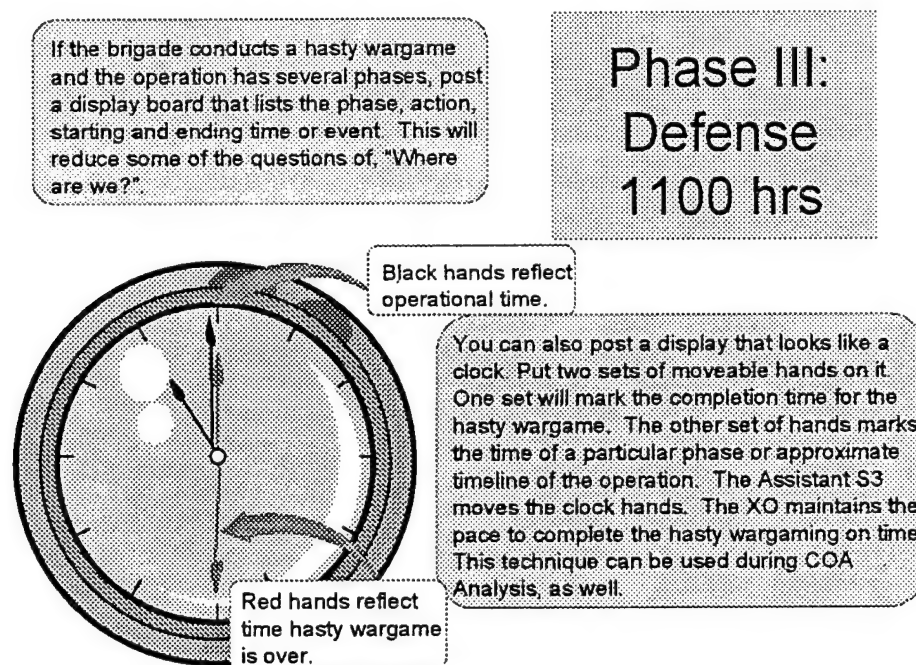


Figure 10. Sample optional TTP for specific staff position.

The doctrinal material is fully consistent with FM 101-5, dated 31 May 1997. The TTPs were gleaned from numerous publications and studies. The TTPs included in these lessons were largely captured from lessons learned from other units' experience in decision-making. Also, sample forms developed and used by various units are available throughout the course material. JRTC personnel responsible for training and evaluating unit performance in the decision-making process provided direct input. They reviewed the lessons for instructional design as well as technical content, and provided numerous previously undocumented specific position TTPs. This procedure helped to ensure that the most current, and hopefully some very useful, heretofore unpublished, information could be made available to battle staff officers and commanders.

Courseware is structured and programmed to allow individual officers to study the material on their own or as part of a group. The instructional material is self-loading and stand-

alone; all necessary software required to run the program is contained on one CD. The single course design allows all to learn the standardized MDMP, the same way, and gain an understanding of the interrelationships and responsibilities among the staff positions. Each step of the MDMP is a separate lesson, and lessons provide various branching options that allow the officer to focus on the desired portions of the training.

Lessons Learned

Since the CBI MDMP was a prototype program, numerous lessons were learned throughout the analysis, design, and development of the course. Some of the discoveries lead to changes in the program; other significant observations are noted.

Doctrine is defined as the "fundamental principles by which military forces guide their actions in support of national objectives. It is authoritative but requires judgment in application" (DA, 1993, Glossary, p.3). As such, doctrine is general in nature; it is therefore subject to interpretation. Its application varies between individuals, and is based on several factors such as experiences, the situation, and available resources. FM 101-5 is a doctrinal publication which provides authoritative guidelines for executing the MDMP, but lacks the necessary detail for "how to" apply this doctrine, especially at brigade level or below. Units need supplemental information in the form of TTPs and samples if they are to apply and execute the MDMP in a standardized, effective, and successful manner.

Since judgment is required in the application of doctrine, individual judgment often leads to different means to accomplish the same or similar task. Hence, there are a variety of TTPs that can be applied to a given situation. Compiling the TTPs for this CBI product required considerable research and compilation of information from many sources, including individual interviews with subject matter experts. It was quite common that TTPs provided or gleaned from one source were questioned or altered by a different source. Differing opinions and the variety of possible solutions make it extremely difficult to gain consensus on TTPs, especially in emerging topical areas where published materials are scarce.

Future Directions

The MDMP CBI course, as designed for the JRTC LTP, will be reproduced and distributed by the JRTC for use by light infantry brigades in training. Although the material was designed specifically for light infantry forces, it could easily be adapted for heavy forces by modifying existing light infantry scenarios and exercises derived from JRTC and replacing them with scenarios, samples and exercises based on the terrain at NTC.

The intended target audience for the training program was the LTP; other uses are immediately apparent. As a learning tool in the advanced course (either Armor or Infantry) it would provide standardization, and reinforcement of material covered elsewhere. It can be used at the staff colleges, or in any areas where a standardized training package is needed. The JRTC is discussing with the Center for Army Lessons a means of wide dissemination of the product; it

may also be possible to place the training material on the World Wide Web for easy Internet access.

While the content of the course has been reviewed and approved, the formal assessment of course impact on proficiency is still under way. The outcome of this evaluation will address two major areas: first, the value of this training course in preparing staff officers and commanders to participate in the MDMP; and second, the value of CBI material as a means to train large audiences on new doctrine when it is developed.

Given a positive outcome of the above evaluation, other CBI courses might be developed for various other processes requiring individual proficiency and staff integration prior to collective participation. In order to leverage the benefits of the course developed under this program, processes that interrelate with the MDMP, such as the intelligence preparation of the battlefield and targeting, should probably receive priority in development. Other materials that address training deficiencies observed at the CTCs should also be considered as follow-on subjects for CBI in the military training environment.

References

- Andre, C. R., Wampler, R. L., & Olney, G. W. (1997 draft). Battle staff training system in support of Force XXI training program: Methodology and lessons learned (ARI Research Report). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Andre, C.R., & Salter, M.S., (1995). Battalion - battle staff training system (ARI Research Note 95-44). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Andre, C.R., & Salter, M.S., (1996). Brigade - battle staff training system (ARI Research Report 1697). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Battle Command Battle Laboratory. (1995). A commander's guide for the coordination and employment of battlefield operating systems. Ft. Leavenworth, KS: Author.
- Center for Army Lessons Learned. (1993). The battalion and brigade battle staff (Newsletter No. 93-3). Fort Leavenworth, KS: Author.
- Center for Army Lessons Learned. (1995a). Combat training centers: The 21st century schools for the application of military art and science (CTC Quarterly Bulletin No. 95-11). Fort Leavenworth, KS: Author.
- Center for Army Lessons Learned. (1995b). CTC trends - JRTC 1st, 2d & 3d Qrts. FY95. Fort Leavenworth, KS: Author.
- Center for Army Lessons Learned. (1995c). CTC trends - JRTC 4QFY95 and 1QFY96. Fort Leavenworth, KS: Author.
- Center for Army Lessons Learned. (1995d). Tactical decision making (Newsletter No. 95-12). Fort Leavenworth, KS: Author.
- Center for Army Lessons Learned. (1996). JRTC priority trends 4QFY94 through 3QFY96. (A compendium of trends, with techniques and procedures that work!) Fort Leavenworth, KS: Author.
- Fletcher, J. D. (1995). Advanced technologies applied to training design: What have we learned about computer based instruction in military training? Alexandria, VA: Institute for Defense Analyses.
- Headquarters, Department of the Army. (1993). Operations (FM 100-5). Washington, DC: Author.

Headquarters, Department of the Army. (1997). Staff organization and operations (FM 101-5). Author.

Operations Group, Joint Readiness Training Center. (1996). Top needs for training at the JRTC. Unpublished materials. Fort Polk, LA: Author.

Pleban, R.J., Thompson, T.J., & Valentine, P.J. (1993). Commander's battle staff handbook (ARI Research Product 94-02). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

The COBRAS Team. (1995). Force XXI training program: Development of virtual and constructive simulation-based training for the conventional mounted brigade – research plan. (HumRRO Interim Report I-PRD-95-13). Alexandria, VA: Human Resources Research Organization.

Thompson, T. J., Thompson, G. D., Pleban, R. J., & Valentine, P. J. (1991). Battle staff training and synchronization in light infantry battalions and task forces (ARI Research Report 1607). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

U.S. Army Command and General Staff College. (1993). The tactical decision-making process (CGSC Student Text 100-9). Fort Leavenworth, KS: Author.

U.S. Army Command and General Staff College. (1995). Command and staff decision processes (CGSC Student Text 101-5). Fort Leavenworth, KS: Author.

U.S. Army Training and Doctrine Command. (1996). Training and doctrine development management, processes, and products (TRADOC Regulation 350-70). Fort Monroe, VA: Author.

APPENDIX A

Minimum Capabilities Required to Operate the MDMP Program

HARDWARE (installed and configured):

- 486/66 computer processor
- 8 MB RAM
- 500 MB Hard Disk
- 101 Key Enhanced Keyboard
- Serial Mouse with driver
- Sound Blaster 16 Sound board, or compatible, with driver and speakers
- 4X CD-ROM
- SGVA graphics card, with driver
- 14-17" monitor, 640x480, 256 colors with .28 dpi

SOFTWARE (installed and configured):

- Windows 3.11 or Windows 95

ACRONYMS AND ABBREVIATIONS

ADO	Air Defense Officer
AFRU	Armored Forces Research Unit
ALO	Air Liaison Officer
ANGLICO	Air and Naval Gunfire Liaison Company Officer
ARI	U.S. Army Research Institute for the Behavioral and Social Sciences
AVN CDR	Aviation Commander
BCBL	Battle Command Battle Laboratory
BSTS	Battle Staff Training System
CA	Civil Affairs
CALL	Center for Army Lessons Learned
CBI	Computer-Based Instruction
CD	Compact Disc
CGSC	Command and General Staff College
CHEMO	Chemical Officer
COA	Course of Action
COBRAS	Combined-Arms Operations at Brigade Level, Realistically Achieved Through Simulation
CS	Combat Support
CSS	Combat Service Support
CTC	Combat Training Center
DA	Headquarters, Department of the Army
DARPA	Defense Advanced Research Projects Agency
ENGR	Engineer Officer
FEA	Front End Analysis
FM	Field Manual
FSO	Fire Support Officer
JRTC	Joint Readiness Training Center
LTP	Leaders Training Program
MDMP	Military Decision-Making Process
MICO	Military Intelligence Company Commander
MP	Military Police
NTC	National Training Center
PSYOP	Psychological Operations Officer
S1	Personnel Officer
S2	Intelligence Officer
S3	Operations Officer
S4	Logistics Officer
SIGO	Signal Officer
SIMITAR	Simulation in Training for Advanced Readiness
SOCCE	Special Operations Command and Control Element
SOP	Standing Operating Procedures
TDMP	Tactical Decision-Making Process
TRADOC	U.S. Army Training and Doctrine Command

TTP	Tactics, Techniques, and Procedures
XO	Executive Officer